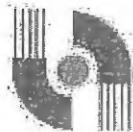


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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2016/2017

TCP 2651 CONCEPTS OF PROGRAMMING LANGUAGES

TCP 2411 PROGRAMMING LANGUAGE CONCEPTS

(All Sections / Groups)

9 March 2017

9 AM. – 11 A.M

(2 Hours)

INSTRUCTIONS TO STUDENTS

1. Answer **ALL** questions.
2. This question paper has 4 printed pages excluding the front cover.
3. Please print all your answers in the answer booklet provided.

Question 1

a) A new programming language named “Jakarta” has got exception handling mechanisms to handle unexpected program errors. Another new programming language name “Surabaya” uses control structures to handle unexpected program errors. Based on your opinion, which language is more reliable and justify your opinion why one is better than the other. Provide at least three reasons as your justification.

[10 marks]

b) Write a BNF grammar for a statement where the left side is a variable and the right side is an exponent. For example:-

$$X = 2^{2^2}$$

would be written as $X = 2^{**2^{**2}}$. The associativity of $**$ operator is right to left. If you made any assumptions, state it clearly.

[9 marks]

c) Add semantic to grammar question 1(b) such that the computed values of the right and the variable of the left sides will be the same. If you made any assumptions, state them clearly.

[6 marks]

Continued...

Question 2

a) What are the four design issues related to names? Explain them.

[10 marks]

b) Distinguish between static type binding and dynamic type binding by providing one example for each.

[7 marks]

c) Stack dynamic variable is suitable for recursions and static variables are suitable for history sensitive operations. Provide examples to illustrate both these points.

[8 marks]

Continued...

Question 3

a) Define operator precedence and operator associativity.
[4 marks]

b) What operator usually has right associativity?
[2 marks]

c) Use a multiple selection statement for C++ to rewrite the code

```
if ((k == 1) || (k == 2)) j = 2*k-1
if ((k == 3) || (k == 5)) j = 3*k+1
if (k == 4) j = 4* k-1
if ((k == 6) || (k == 7) || (k == 8)) j = k -2
```

[19 marks]

Continued...

Question 4

a) What are the three general characteristics of subprograms?
[6 marks]

b) What does it mean for a subprogram to be active?
[3 marks]

c) What are the possible models of parameter-passing for a subprogram?
[6 marks]

d) What are the advantages and disadvantages of keyword parameters?
[4 marks]

e) Consider the following program written in C syntax:
[6 marks]

```
void fun(int first, int second)
{
    first += first;
    second += second;
}
void main()
{
    int list[2] = {4, 7};
    fun(list[0], list[1]);
}
```

For each of the following parameter-passing methods, what are the values of the list array after execution?

- i. Passed by value
- ii. Passed by reference
- iii. Passed by value-result

THE END